Infiltration of Supplies and Personnel
to South Vietnam
24 Jul 67
(1968 info included)

24 Jul 67 — Supplement to S-2408, Estimate of Infiltration of Supplies and Personnel to South Vietnam

10 Oct 68 — Fact Sheet, Communist Logistics Requirements for South Vietnam (DIA's current estimate on Communist logistic resupply requirements)

Attachments: CIA pieces on:

North Vietnamese Seaborne Imports
Haiphong Port Operations
Flooding and Effects on Transportation in North Vietnam North of the 20th Parallel
Communist Supply Requirements
Rail Disruption in China
North Vietnamese Rail Imports

STAT 21 Mar 68 [redacted] to Ch/D/I memo re An Evaluation of Sources of Information on Communist Ammo Expenditures in South Vietnam

Attachments: Predicted Losses of Supplies in Route Package I-III, Second and Third Quarters, 1968

Logistical Requirement of Communist Forces at Dien Bien Phu

Next 1 Page(s) In Document Denied

I/L

Predicted Losses of Supplies in Route Package I-III
Second and Third Quarters, 1968

		Tons per day
A.	Flow into area	
	Assumed to remain constant at the estimated first quarter 1968 level of 840 tons a day of which the tonnage that remains in the 3 route packages increases from 560 to 700 tons a day and the flow into Laos decreases likewise.	840
B.	Losses	142 - 179
	1) Losses due to air attacks	72 - 109
	a) Supplies on trucks (Predicted destruction of trucks 2,300-5,100 ÷ 180 days x 50% loaded x 3 tons/load)	19 - 42
	b) Attacks on rail cars and watercraft assumed to increase in proportion to the increase in truck losses (6 tons x 1.9 or 4.2)	11 - 25
	c) Secondary explosions and fires assumed to continue at the high rate of the first quarter (8.8 sorties per/secondary compared with an average of 13.9 sorties/secondary during 1967. Projected sortie rate is 66,700 sorties during 182 days, or 366 sorties/day (366 ÷ 8.8 = 42 secondaries per day x 1 ton each)	42
	2) Normal losses	70
	(700 tons a day remaining in 3 route packages x 10 percent)	

25X1

C. Loss as Percent of Flow 17 - 21%

(142 ~~+~~ 179 + 840 = 16.9 - 21.3)

1) Loss due to air attacks 8.5 - 13%
(72 ~~+~~ 109 + 840 = 8.5 - 13.0)

2) Loss due to normal losses ~~8~~ 8.3%
(70 + 840 = 8.3)

25X1

SECRET

3 de 4/c

Logistical Requirement of Communist Forces at Dien Bien Phu

We have made a quick library search for information on Viet Minh logistical requirements during the battle of Dien Bien Phu. Bernard Fall in "Hell in a Very Small Place" has the best treatment of the subject that we can find.

He claims that French artillery specialists after the battle estimated that the Viet Minh had fired 30,000 shells of 105-mm and probably over 100,000 shells of other calibers. He estimates that this expenditure represents roughly 1,300 to 1,700 tons of ammunition.

Applying our usual factors to the number of rounds expended results in an estimated expenditure of 2,700 tons, a thousand tons or more greater than Fall's estimates. Taking a 150 day period -- the battle extended from roughly December 1953 through 7 May 1954 -- gives average daily expenditures of:

	Total Expenditures	Tons Daily Expenditures
Fall's estimates	1,300 to 1,700	8.6 - 11.3
I/L estimates*	2,700	18

* Based on estimates in "Hell in a Very Small Place" of the number of rounds expended.

Fall states that 6,500 tons of other supplies were required during the same period, or 43 tons a day. Thus the range of total logistical requirements range from 52 tons to 61 tons per day.

In the Khe Sanh study we estimated that 35 tons of supplies a day would be required by the 22,000 North Vietnamese troops in that area. At Dien Bien Phu the communist forces totalled about 49,000 combatants. If we increase our Khe Sanh estimates proportionately, (to 49,000 rather than 22,000) the enemy logistical requirements would be 78 tons a day.

Our estimate of ammunition requirements for the enemy forces in the Khe Sanh area from 6 to 10 tons. Increased proportionately to the force levels engaged at Dien Bien Phu gives ammo requirements of 13 to 22 tons a day, close to I/L's estimates of the expenditure of 18 tons a day at Dien Bien Phu.

SECRET

Ammunition expenditures accounted for about 29 percent of the total daily supply requirements at Dien Bien Phu. Our Khe Sanh estimates had ammo accounting for 28 percent of the total.

This look at Dien Bien Phu seems to indicate that our estimates of enemy logistical requirements at Khe Sanh are in the right ball park. In view of the shorter logistical pipe line and the much improved transport capability of the North Vietnamese the look at Dien Bien Phu also supports our conclusion that the enemy forces will have no difficulty in supplying their forces in the Khe Sanh area with all needed supplies.

North Vietnamese Seaborne Imports

North Vietnamese seaborne imports are shown in the following table.

Thousand Metric Tons

	1964	1965	1966	1967	(January-August) 1968	
Total (rounded)	690	850	1,030	1,420	1,340	
Food	160	120	80	460	510	38%
Fertilizer	140	160	230	150	120	9%
Petroleum	140	170	200	250	260	20%
Miscellaneous	240	400	520	560	450	33%
						100%

Since the beginning of the Rolling Thunder program in early 1965, North Vietnam's seaborne imports have more than doubled, exports have dwindled, and Free World ships have been largely replaced in the trade by Communist ships. Deliveries from Communist countries currently* account for 98 percent of total import tonnage, compared with 74 percent in 1964. The end of the US airstrikes north of the 20th Parallel saw the pace of shipping quicken. Total deliveries in May and June were at record levels. Imports in August were only 60 percent of those in June, reflecting a seasonal pattern observed since 1965. This may reflect, in part, the monsoon rains which make off-loading operations and inland movement of goods more difficult.

* January - August 1968.

Total seaborne imports for the first eight months of 1968 were 31 percent above the total of the comparable period in 1967. Food (74 percent higher) and petroleum (42 percent higher) imports showed the largest increases.

No seaborne imports of military aid have been confirmed. A Soviet crew member of the Aleksander Grin which was docked at Haiphong during July - August 1968 reportedly stated that fire which broke out on board on 4 August caused apprehension because ammunition was stored in two holds. A British officer aboard a nearby ship described the contents from the holds as "small cases" and asserted that no special security measures were taken in unloading them. This, coupled with our knowledge of past practice in which ammunition and other munitions are imported by rail leads us to conclude that ammunition probably was not a part of the Aleksander Grin's cargo.

This judgment is not negated by the arrival, probably in August, of three MI-4 (Hound) helicopters. Even if these aircraft came by ship -- which in fact is not established as yet -- they are joint use (military/economic) items traditionally carried in auxiliary goods annexes in military aid agreements and are not given the discounts or long payout periods accorded military end items.

25X1

Haiphong Port Operations

The North Vietnamese restored the major rail and highway bridges that lead into the port of Haiphong soon after the US bombing restrictions were announced, thus achieving greater economy and efficiency in movement of material from the port. The greater use of barges has also been evident. Currently, barge trains and large watercraft move supplies during daylight hours on the waterways clearing Haiphong port. Prior to the bombing restrictions barges were forced to move singly or in pairs and at night only. Lightering craft now move freely to and from the port whereas formerly they used merchant ships as shelter from air strikes and moved only at night. Another important activity related to the bombing restriction was the return of the large Soviet-built Zemlesos suction dredge. This dredge was observed in Haiphong in mid-April for the first time since June 1966.* Its return, presumably from a safe haven in China, provides the North Vietnamese with a dredge that can operate in the channel approaches to the port. The North Vietnamese have two large bucket dredges and numerous small suction dredges which have been active for the past year in the Haiphong port area. Dredging alongside the Fishing Wharf and the Transit Wharf has provided general cargo wharves capable of handling drafts up to 15 feet. Dredging has taken place at three sets of mooring buoys in the Cua Cam River to berth merchant ships. The use of these moorings has increased

* In the absence of the dredge the approach channels to Haiphong had silted approximately 6 feet, reducing the low water depth to about 14 feet. Since the high tide varies from 6 to 12 feet ships with drafts over 22 feet have had to wait for exceptionally high tides.

port efficiency by allowing cargo ships to be lightered close to the stevedore and barge supply.

The North Vietnamese have also been importing large numbers of barges* and tugs to assist their offloading operations. To augment POL transport requirements numerous dry cargo barges have been converted to liquid covers by the installation of storage tanks in their holds. The large number of POL barges thus available are used as floating POL storage as well as distribution vehicles.

The most significant construction activity in the port area is the new quay extension to the Chamber of Commerce Wharf. This construction began in October 1967 and, when completed, it will accommodate at least two merchant ships, bringing the total berthing space at the port to approximately 13 ships. Unlike Haiphong's other wharves, all of which are of open piling construction, the new quay has a steel sheet-piling face wall retaining solid fill. This type of construction should facilitate the handling of heavy cargo items and at the same time, will allow for the extension of a rail line direct to shipside, a service not previously available at other Haiphong wharves.

In general the pace of construction activity, with exceptions of the restoration of the bridges and the dredging, has been slow. The North Vietnamese have not made a significant effort to complete the new pier nor have they begun to repair the damaged shipyards in Haiphong. Some repairs were

* In 1967 166 craft were imported along with 296 barge sections in 1968 through August about 80 craft and 300 barge sections have been imported.

made at the Haiphong Shipyard No. 4, the largest and most important ship repair facility in North Vietnam, but this yard received only superficial damage and little work was needed to restore it to its prestrike capability. The other shipyards have remained in inactive since they were struck in September and October 1967.

Flooding and Effects on Transportation in North Vietnam North of the 20th Parallel

Summary

Heavy rains during the Southwest monsoon (a period from May to September during which maximum rainfall occurs in the Red River delta and the northeastern portions of North Vietnam) and two tropical storms - one in August and one in September - resulted in severe and widespread flooding of key portions of the transportation system north of the 20th Parallel. The most severe disruptions occurred at Hai Duong on the Hanoi - Haiphong railroad line, at Viet Tri on the Hanoi - Lao Cai line, and at Ninh Binh on the Hanoi - Vinh line. Localized flooding was also noted at Hanoi and along the Kep - Hon Gai rail line presently under construction. Extensive flooding with such adverse effects has not been observed since the beginning of the Rolling Thunder program in 1965. The last flood of similar magnitude occurred in 1955, when the dike system in the Red River delta was breached.

Extent and Effects of Flooding

In late June seasonal rains and the rising level of the Red River had begun to disrupt the use of some of the temporary highway and railroad bypasses to the Doumer Bridge over the Red River. Photography of a highway ponton bypass bridge several miles south of the Doumer Bridge showed that the crossing was unserviceable due to the flood waters, causing more than 125 trucks to back up on the eastern bank. At that time the Doumer Bridge was under repair and was not serviceable for truck traffic, compounding

the problems caused by the flood. The rail bypasses were not observed at that time, but the Doumer Bridge was serviceable for rail traffic following 18 June. By July, nearly all the temporary highway and railroad bypasses were eliminated, but the Doumer Bridge was serviceable for both rail and truck traffic. (18 July 1968). The North Vietnamese probably anticipated problems with floods and rushed reconstruction of the Doumer Bridge. With the Doumer Bridge serviceable, traffic could move into Hanoi during August when heavy rains and a tropical storm caused extensive flooding. Although 18 August Giant Scale photography showed large scale flooding north of Hanoi, the Hanoi area was not covered. A low level mission of 15 August, however, showed a train and several trucks crossing the Doumer Bridge, indicating that traffic in the immediate Hanoi area was not seriously disrupted.

After heavy rains in early August and a tropical storm which hit on 13 August, Giant Scale photography of 18 August revealed that five miles of the Haiphong railroad line east of Hai Duong was inundated. Additionally, the main railroad bridge at Hai Duong East was severely damaged by the floods and the bypass railroad bridge also appeared damaged. At the Hai Duong Railroad Bridge over the Song Thai Binh, the bypass was also damaged. The main bridge, unserviceable since at least mid-1967, was not observed. Thus, the flooding cut through rail service between Hanoi and Haiphong. Route 5, the main road between Hanoi and Haiphong which parallels the rail line, was also completely flooded in this area. In some areas in the Red River Delta, the flooding extended as much as five miles on either side of several of the main river channels, disrupting highway and, to some extent, waterway traffic in the region. The severity of this flooding and

the widespread areas covered undoubtedly presented the North Vietnamese with formidable problems in the movement of goods between Hanoi and Haiphong.

A low level drone mission of 2 September, about two weeks after the original Giant Scale mission, covered the main Hai Duong bridge at Song Thai Binh and showed that flooding was still a problem at this point, as several AA pieces were sighted on the rail line, apparently moved there from a nearby flooded AA site. Their presence on the line suggests rail traffic was either sporadic or unable to traverse this area due to the damaged Hai Duong bridges. By 14 September, however, photography of Haiphong showed a 40 car train pointing west, indicating that rail traffic -- possibly shuttle service -- had resumed on the line. Comparable information of rail movements out of Hanoi was not available due to poor coverage.

On the Lao Cai line, the 18 August Giant Scale mission showed extensive flooding between Yen Bai and Kinh No. The six railroad ferry slips at Viet Tri were inundated and unserviceable and there was no rail traffic observed. The highway ponton bridge and two highway ferries were also inundated. The highway cable bridge constructed over the destroyed Viet Tri Railroad/Highway Bridge by June, 1968 was serviceable, but no vehicle traffic was observed, possibly because of damaged bridge approaches. Several sections of the railroad bed about 20-25 miles north of Viet Tri were washed out, as were the roads which parallel the Red River between Viet Tri and Lao Cai.

A Giant Scale photographic mission of 21 August revealed that the extensive flooding observed at Viet Tri on the Hanoi - Lao Cai railroad

line on 18 August had receded somewhat. Two of the six railroad ferry slips, one on each side of the river, were serviceable but the others remained inundated. Rail cars were observed on a rail spur near the ferry on the southern bank. The receding flood waters thus allowed the restoration of some rail traffic at this point, but through service remained disrupted by washed out portions of the line north of Viet Tri. The 21 August mission also showed that vehicular traffic had resumed at Viet Tri. Whereas there was no evidence of vehicular movements during the flooding observed on 18 August, one truck was noted crossing the cable highway bridge and seven others were on the northern approach on 21 August.

Rail and highway traffic south of Hanoi was also disrupted by flooding of the Red River at Ninh Binh. On 20 August, all rail bridges at Ninh Binh were unserviceable, but a rail ponton bridge had been emplaced by 30 August. Just north of Ninh Binh, a low level drone mission of 19 September reflected some portions of the road-bed slightly damaged by flooding. While trains can still move on this portion of the line, repairs will be necessary to prevent further deterioration. Further south at Phuong Dinh, about five miles north of Thanh Hoa, one of three railroad bridges collapsed -- apparently because of flooding. Photography of 23 August showed the bridge and four pieces of rolling stock in the water, but 30 August coverage showed one of the two remaining railroad bridges in operation.

While flooding undoubtedly caused local transport problems on the Vinh line, it does not appear that disruptions were of long duration. At the same time that flood waters were rendering the Ninh Binh Railroad

Bridge unserviceable, photography revealed the North Vietnamese were installing a railroad ponton bridge. Also, continued coverage of key transport facilities at Thanh Hoa, Qui Vinh and Tho Trang indicates no let up of logistic activity. Indeed, a 19 September drone mission over Ninh Binh and Nam Dinh shows continued activity, including four trains and about 90 cars and five locomotives at Ninh Binh, a high count for this yard.

Photography of the Kep - Hon Gai railroad line in late June and July showed that construction of the route, which had advanced steadily since June, 1967, was hampered because of flooding. Subsequent coverage in August and September indicated that flooding continued, particularly on the northwest portions of the line near the Song Thuong river, a low-lying region. Near Hon Gai, however, the terrain is higher and it appears that some construction is continuing. While this line could be put into operation by mid-1969, the flooding has delayed completion by about six months from the original estimate. Still, considerable dike work will be needed to eliminate the threat of flooding in the low-lying areas.

The severity of the flooding, the key regions affected, and the widespread areas covered presents a substantial problem for the North Vietnamese. Reconstruction of the railroad roadbeds on portions of the Haiphong and Lao Cai lines and of key road segments will require considerable time and effort and rail and highway traffic will be hampered at certain spots. While past experience has shown that the North Vietnamese, aided by Chinese engineering units, are expert at providing alternate means to maintain the flow of traffic, the widespread flooding of key facilities should negate most of these efforts. As extensive repairs to the basic

transport system are now necessary, the extent of manpower, materials, and time required has increased. During the time that land transport remains disturbed by flooding and its effects, water traffic should assume the major responsibility for moving goods. The flooding, however, has undoubtedly affected key transshipment and storage areas, thereby hindering water traffic also.

Communist Supply Requirements

1. Current Logistical Resupply Requirements

A net increase in Communist strength coupled with an expansion of military operations have contributed to a substantial increase in Communist resupply requirements in 1968. NVA and VC regular and administrative support forces* in South Vietnam currently require on the order of 290 tons of supplies per day, with about 90 tons of this amount -- roughly 30 percent -- obtained from external sources. (See Table I attached) VC/NVA dependence on external sources for food, weapons, equipment, and ammunition is growing, partly as a result of Allied denial efforts and partly as a result of the growing proportion of North Vietnamese forces in South Vietnam, especially since these are generally deployed in food deficit areas. External supplies comprise about 25 percent of the total daily food supply requirement, 30 percent of the Class II and IV requirements (weapons and equipment) and 85 percent of the ammunition supply requirement.

2. Infiltration of Supplies into South Vietnam

The road network through the Laotian Panhandle is used primarily to supply weapons, equipment, and ammunition. A portion of the food requirement for Communist forces in the northern provinces is infiltrated through or around the DMZ. Cambodia is primarily a source for food and some items such as medical supplies and radios. Sea infiltration has been

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* Based on CIA order of battle estimates for December 1967 through July 1968.

greatly reduced by US countereffforts so that the principal use of sea routes at the present time is for the movement of supplies -- primarily arms and ammunition -- along coastal areas in South Vietnam.

Communist forces have the ability to satisfy a substantial part of their logistical support requirement from internal sources, with the exception of ammunition. A large percentage of Communist regular forces in South Vietnam are now equipped with the new family of 7.62 mm small arms. The ammunition for these weapons, as well as for increasing numbers of mortars, rockets, and recoilless rifles must be obtained from external sources. The VC are capable of producing limited amounts of munitions to supplement what they receive from abroad. It is unlikely however, that the VC could develop production capabilities to supply all Communist forces because of limited in-country resources and shortages of trained technicians. Insurgent production is normally limited to reloading cartridges repairing damaged weapons, and the manufacture of mines, grenades, and booby traps.

3. Significant Recent Developments/Supply Losses

During the past six months Communist forces in South Vietnam have suffered much larger losses of weapons and ammunition resulting from allied ground actions than previously.

(1) Total enemy losses of weapons and ammunition during the first six months of 1968 totalled 920 tons, 34 percent greater than the enemy's losses of weapons and ammunition in all of 1967.

(2) Weapons losses on a monthly average increased from 19.5 tons in 1967 to 71.5 tons in 1968, an increase of almost 270 percent.

(3) Ammunition losses on a monthly average increased from 38 tons in 1967 to 82.4 tons in 1968, an increase of 116 percent.

(4) Weapons and ammunition losses have increased in all four Corps in 1968 compared to last year, the largest increases occurring in I Corps and III Corps. These two Corps account for about 83 percent of total enemy losses -- weapons, ammunition and foodstuffs.

(5) Foodstuffs losses, however, have declined greatly this year, from almost 14,000 tons in 1967 to about 2,800 tons during the first half of this year.

Preliminary data indicates that ammunition and food losses increased substantially in the third quarter, although the rate of weapons losses has declined somewhat during this period.

4. Intelligence Problem

Analysis of documents captured in Operation Delaware in the A Shau Valley in April of this year indicate that Communist forces have been transporting quantities of food supplies into South Vietnam. The origin of these food supplies is believed to be North Vietnam. Currently we are making an effort, through exploitation of documents [redacted] 25X1

25X1 [redacted] to determine if this flow of foodstuffs is continuing. Prior to Operation Delaware we lacked sufficient information to confirm the flow of large quantities of food fron North Vietnam into South Vietnam via Laos. We are fairly confident that our estimate of Communist weapons, equipment and ammunition requirements reflect the actual combat needs of Communist forces in South Vietnam./ ~~We are confident of~~ ~~our estimate on the volume of external food supplies required and delivered to Communist forces in South Vietnam~~. Our estimate on the volume of external food supplies required and delivered to Communist forces in South Vietnam is much more tenuous.

5. Comparative Methodologies

A. Order of Battle

Saigon Logistics Conference - For logistic purposes combat strength included maneuver units and combat support strength; Irregular and administrative service units were not included in logistic considerations; with the provision by MACV that logistic computations would be included as these units were identified and TOE's established. In the updated Logistics Factbook (April 1968) MACV includes guerrillas and administrative service units in its logistic computations.

B. Level of Combat

Saigon Logistics Conference - Expenditures rates were to be computed on a periodic basis to determine the percent of basis load expended and levels of combat. In the updated Logistics Factbook MACV

lists varying levels of combat with associated ammunition expenditure rates - but provides no estimate on the actual rates of combat prevailing in South Vietnam.

C. Class I - Food

Saigon Conference - For logistic purposes combat strength included maneuver units and combat support units. In the revised Factbook MACV includes VC/NVA maneuver, combat support, and administrative service troops as receiving Class I support from the Viet Cong supply systems. OER agrees to this, however, MACV extends Class I support to include 25 percent of the total guerrilla force. OER estimates that guerrillas are basically self sufficient, acknowledging, however, that when guerrillas are used to supplement maneuver units, they may be supported. OER does not have sufficient information to quantify this support presently.

MACV is presently using a 10 percent factor for food spoilage in estimating requirements. OER used a spoilage allowance, comparable to MACV's, in NIE 14.3-67. In 1968 a decision was reached within OER not to include food losses or spoilage in the SNIE 1968 estimate of Class I food requirements.

MACV makes no estimate on Class I external support - OER estimates Class I external requirement of 60 tons per day.

D. Class II and IV

Saigon Logistics Conference - MACV estimated that NVA requirement should be weighted in relation to VC on a 2 to 1 basis

for quartermaster clothing and equipment. In the revised Factbook Class II and IV supplies are divided into individual and unit equipment, except for administrative service, guerrillas, medical and transportation units. The individual NVA Class II and IV requirement is equivalent to .05 lbs; for the VC .04 lbs; the sum of MACV's estimated Class II and IV requirements, individual and unit issue, for VC/NVA forces is less on a per man per day basis than the OER Class II and IV estimate of .30 lbs per man per day for administrative service troops and .35 lbs per man per day for NVA/VC main and local force troops. MACV estimates that 25 percent of all Class II and IV requirements are procured from external sources - OER estimates that 30 percent of all Class II and IV requirements are procured from external sources.

E. Class III

Joint agreement that the POL requirement is negligible.

F. Class V

Saigon Conference - Approximately 85 percent of all Class V ammunition and weapons (included by MACV in Class V), are supplied from out-of-country sources. Packaging of Class V amounts to 50 percent of net ammunition weight - 33 percent of gross ammunition weight. Expenditures are based on 1/4 of the basic load for mortars and recoilless rifles, 1/3 the basic load for small arms. Fair, wear, and tear is equivalent to 5 percent of total weapons on a yearly basis. Captured enemy weapons and ammunition would be

replaced on 1 to 1 basis. Revised Logistics Factbook - MACV estimates that 90 percent of all ammunition requirements are obtained from out of the country; that guerrillas expend 1/2 a basic load of ammunition yearly, administrative services expend/basic load of ammo per year; 5 percent weapons fair, wear, and tear allowance; expenditures rates geared to level of combat - without specifying actual level of combat. OER maintains that 85 percent of ammunition supply is satisfied from external sources, and bases its ammunition requirement on estimated field ammunition expenditures - small arms and heavy weapons ammunition expenditure provided by MACV. Presumably these expenditure rates reflect given levels of combat.

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RAIL DISRUPTION IN CHINA
1 OCT 68

The rail disruptions on the two principal lines serving south China and the North Vietnam border reached their highest level for the year during June. In June the Wu-Han to P'ing-hsiang line was interrupted for approximately 75 to 80% of the time while traffic on the Pao-chi to Kuei-yang line was interrupted for approximately 60% of the time. During July the number of reported disruptions decreased sharply so that the Wu-Han to P'ing-hsiang line was interrupted for only approximately 35% of the time. The Pao-chi to Kuei-yang line does not appear to have experienced any serious disruptions during July. Since the first of August both of these rail lines have been functioning normally without any signs of disruptions from "armed struggles" or fighting factionalists.

25X1

The highways and railline (Hengyang to Canton) east of the railline from Wu-Han to P'ing-hsiang have been interrupted occasionally by factional fighting since the first of June. However, in this area the main disruptions have been caused by flooding which became severe in June and lasted until approximately the first part of August. Since that time only sporadic interruptions have been noted.

25X1

Port disruptions and problems in terms of delays in berthing and in loading and unloading were particularly severe in June at North China ports. Typical of these problems were reports of up to 58 day delays at Dairen in obtaining a berth and the lack of sufficient and/or efficient dockworkers. In July and August these problems continued at most Chinese ports and several ports along the Yangtze River. In several cases there were reports of ships being fired on from the shore and from other ships. Since the first of September the situation has improved and no long delays have been reported in obtaining a berth, except at the port of Canton.

25X1

The Tsinghai-Tibet and the Szechwan-Tibet highways are the only exceptions to the general improvement that has occurred since the first of August in the functioning of the transportation system. Throughout August traffic was delayed by heavy rains on the Tsinghai-Tibet highway. Reports have indicated that traffic delays continued in September although no causes have as yet been noted. Traffic on the Szechwan-Tibet highway was disrupted during August due to "armed struggles". These disruptions have continued to be noted during September.

25X1

We have not disagreed in general with the reporting or appraisals found in the AmConGen Hong Kong reports on the rail and water transport situation in Communist China. The statistics found in these reports on the average number of freight cars per month entering Hong Kong, the monthly tonnage of water-borne imports, and the monthly tonnage of water-borne transit cargo from China have been of great interest and value. We have used these figures in reports on the volume of Chinese overland international trade and in relation to our current appraisals on the general status of the transportation system. It is hoped that the reporting of this information on a monthly basis will continue.

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North Vietnamese Rail Imports

North Vietnamese rail imports are shown in the following table.

Thousand Metric Tons

	1967			January - August 1968		
	Total	USSR and E. Europe	China	Total	USSR and E. Europe	China
Total	365	155	210	235	104	131
Military Equipment	125	100	25	75	60	15
Economic Goods*	240	55	185	160	44	116
Coal	65		65	-	-	-
Petroleum**	10	10		10	10	
Rail Construction materials	20		20	40		40
Other	145	45	100	110	34	76

* Many of these goods are joint use items for civilian and military consumers. Included is a large variety of consumer and industrial goods such as vehicle machinery, spare parts, and construction equipment.

** Including petroleum moved only by rail and that delivered by ship to [redacted] Chinese ports, thence moved by rail to North Vietnam.

1. The total tonnage of military equipment and economic goods imported into North Vietnam by rail during the first eight months of 1968 was three percent under that imported in the comparable period of 1967.

2. Because of reduced requirements for ammunition subsequent to the delimitation of bombing, the tonnage of rail imports of munitions in the first eight months of 1968 fell nearly 10 percent under that during the comparable period in 1967.

3. Although the bombing restrictions probably reduced ammunition requirements, resulting in a 10 percent drop in rail imports (measured on a tonnage basis) of munitions, we do not believe that the value of such imports declined, Contrariwise, available data suggest that the value of such imports probably increased.

a. Supplemental arms contracts signed by the USSR and North Vietnam in November 1967 and April 1968 cover munitions requirements in 1968-69. A part of the requirements covered expenditure and loss but some new types of equipment probably were included in the contracts. Some (perhaps three) MIG-21F all-weather interceptors probably were delivered during the first half of 1968. Other equipment seen for the first time (hence possibly declined in 1968) are the 23-mm antiaircraft gun, the 107-mm 12-tube rocket launcher, two Polucat'-1 class torpedo retrievers, and a Huchwan class PTH hydrofoil motor torpedo boat. An IL-18 transport and three MI-4 (Hound) helicopters also were delivered in 1968.

b. The significant increase in the volume of supplies flowing into southern Laos -- ~~285~~ 189 short tons per day

(STPD) during the first eight months of 1968 compared with 83 STPD in the comparable period of 1967 -- further support a higher level of arms imports.

c. North Vietnam continues to import other commodities (e.g., food, POL) in excess of their estimated requirements. For example, North Vietnam imported nearly 10 percent more food in the first eight months of 1968 than it did in all of 1967.

d. Weapons losses in the south may also support an increased rather than a decreased level of arms imports. Excluding losses from air attack and losses in Laos, weapons and ammunition losses per month in 1968 have been 267 percent and 116 percent higher than the respective losses in 1967.

4. During the first eight months of 1968 the tonnage of economic goods imported by rail was at par with that achieved in the comparable period of 1967. Total rail imports of economic goods in the first eight months of 1968 excluding coal -- which has not been imported since the bombing of the Thai Nguyen iron and steel complex in April 1967 -- increased 27 percent over the level of the comparable period in 1967. This reflects the increased imports of construction materials and replacement parts required to repair bomb damage. [redacted] 25X1

25X1 [redacted] Observed rail shipments averaged 1,096 tons per month in the

first quarter 1968 compared with an average of only 338 tons per month in 1967.* The same source also provides some monthly plans for the movement of economic goods by rail from the USSR through China into North Vietnam. These data show that the monthly planned target averaged 3,796 tons per month in 1968 compared with 2,355 in 1967 and 2,850 tons in 1966.**

25X1

Rail Imports

Because most of our figures are derived from requirements, we need to firm them up and flesh them out with data on actual

- tonnages or cars
- commodities
- types of goods

imported into North Vietnam. Ideally, we would wish for a source or sources counting cars and observings unloadings on the major rail lines in North Vietnam.

25X1

[redacted] Even were we to have a complete series, we would still be faced with the problem of performance (viz., planned vs. actual imports). Irrespective of this, the plan data would give us a better fix on the problem than we have at present.

Supplement to Project S-2408

Estimate of the Infiltration of Supplies and Personnel to South Vietnam

1. Capacities of the LOC's

During the past year the Communists have generally maintained or slightly improved the overall capacity of the road network that is used for logistic support of the Communist forces in South Vietnam. During recent months they have also built a significant extension to the network that now permits truck traffic to cross the border directly from Laos into South Vietnam for the first time. The capacity of the routes to deliver supplies to forward areas along the Laotian border continues to be restricted by capacities in Laos, rather than those in North Vietnam.

Table 1 shows the change in the estimated capacities of the major routes in southern North Vietnam and the Laotian Corridor. Capacities of the routes in the southern part of North Vietnam have been increased due to new construction of bypasses and use of multiple facilities such as highway ferries, fords, and pontoon bridges. Capacities of the two major routes to the DMZ - Routes 1A and 101 - have not changed greatly, but capacities of the routes leading to the Laotian Corridor have increased considerable. Route 15 to Mu Gia Pass appears to have been improved to the extent that the capacity is now estimated at 740 short tons a day in the dry season and 250 tons a day in the rainy season compared with an estimate

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of 450/100 tons a day nearly a year ago. Route 137, the other road leading to the Laotian Corridor, is also believed to have been improved slightly, from 450/100 tons to 500/100 tons.

Capacities of Laotian roads leading from these border crossings have not been maintained quite as well as they were last year, although these capacities still far exceed the average level of traffic observed moving over the routes. The dry season capacity of Route 12 leading from Mu Gia Pass is now estimated to be about one-fourth less than it was earlier and Route 23 capacity is possibly about 40 percent less. The reduced quality of these roads may be the combined result of bombing and of greater rain fall than usual during the dry season in the Mu Gia Pass area on the Laotian side of Annam Mountains. Route 912 leading from the other border crossing still has a capacity of about 200/40.

Dry season capacities of routes further south in the Corridor are more or less the same as they were last year, and it is estimated that the routes continue to have the capacity to support at least 400 tons a day to the ends of the routes in the border area. Half of this total can be moved into South Vietnam on Route 922 which now extends about 35 miles from the border into the A Shau valley.

Through capacities of the Laotian routes south of Route 9 during the rainy season are now estimated to be zero for truck

traffic based on the experience of the past rainy season. Actual capacities, however, will depend on the measures that Communists take to maintain traffic. Last year they made no apparent effort to keep the roads open for truck traffic during the rainy season.

2. Utilization of the Route Capacity and Traffic Density

The level of traffic observed moving on the routes is low compared with the capacity of the routes, and the number of trucks compared with the mileage of routes used is also low. These factors have made aerial interdiction of the truck supply route exceedingly difficult.

A comparison of the capacity of Route 15 (740 tons/day during the dry season) at Mu Gia with the estimated tonnage moved on the route (19 trucks carrying 57 tons/day) during the past dry season reveals that on the average only about 8 percent of the route capacity has being utilized. If all of this tonnage was moved south in Laos on Route 12 where the route capacity is estimated to be 350 tons per day in the dry season, about 16 percent of the capacity was used on the average. Even smaller portions of the capacity of routes further south appeared to be used as the trucks fanned out over various routes from the junction of Routes 12 and 23.

It is estimated that the Communists utilized between 400 and 600 trucks on the approximately 700 miles of roads that they control in the Panhandle. Thus they are using less than one

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truck per mile of roads. Although certain roads are used more than others, thus creating traffic densities higher than the average, the most frequently used roads do not carry a significantly high density of traffic. Route 12 can be used as an example. Assuming that 19 trucks per day moved south and 19 trucks moved north each day during the past dry season, about 38 trucks a day would have moved over the route. Most of these trucks moved in hours of darkness, or in about 12 hours. Thus only an average of about 3 trucks per hour moved past any one point on the road.

Other factors making aerial interdiction of the route and the destruction of trucks difficult are the simplicity of the network (e.g., no big bridges, dirt roads that are easily repaired after attack) and the preparation of alternate routes, bypasses, turnouts, and truck parks. Alignment of the roads was selected in areas that afford maximum concealment from the air as well as best conditions for road maintenance.

3. Tonnage Delivered into Laos from North Vietnam and Cambodia During 1966-67

Table 2 presents the basic computation of the total tonnage made available in Laos by traffic via all routes during the year beginning 1 October 1966.

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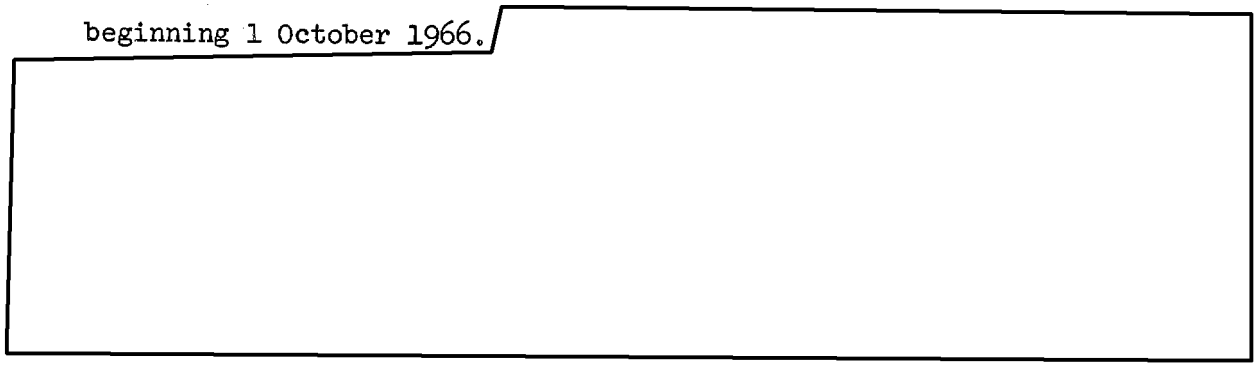

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Supplies entering Laos over the Se Kong and Route 110 are reported to be mostly food, but some medical supplies and petroleum are also reported.

6. Comparison with Dry Season 1965-66

A comparison of the estimated tonnage that moved into Laos over Route 15 during the 1965-66 dry season and the present dry season is shown in Table 4. The totals estimated are 16,300 and 11,900 tons respectively. In addition to Route 15, however, it is known that Route 912 was also used as a supply route during the 1966-67 dry season, and it is estimated that about 8,300 tons were moved into Laos over this route from North Vietnam. Thus, the total moved by truck into Laos from North Vietnam during the 1966-67 dry season was over 20,000 tons compared with about 16,000 tons during the previous dry season.

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8. Road Construction

The motorable road system in the Laos Panhandle which is presently controlled by Communist forces has been significantly expanded since 1964. The following tabulation shows the existing road mileage in 1964 and the subsequent annual additions which the Communists have completed along the main axis from Mu Gia Pass to the Cambodian border:

Year	Statute Miles
1964	208 (existing)
1965	136 ( )
1966	304 (additions)
1967	53 ( )
Total	701

The extensive expansion of the road system in 1965-66 afforded the Communists a choice of alternate and new routes which extended the motorable road system to the Cambodian border. In 1967, less new road construction was undertaken. However, many short bypasses were constructed along existing routes. These short bypasses are not included in the above figures.

The most significant new road construction in 1967 was the extension of route 922 eastward to connect a motorable road from Laos into the A Shau Valley of South Vietnam. Most of the remaining east-west roads end before reaching the South Vietnam border and cross into South Vietnam only as foot paths and cart trails. It

is estimated that over 260 miles of such trails are in use at the motorable terminii of roads in the Laos Panhandle.

Most of the road network is single lane unimproved earth surface which has been constructed and maintained by an estimated PL/NVA work force of 15,000 men. Some portions of the road system have been upgraded to all-weather status by means of corduroy on swampy sections, gravel or oil surfacing and drainage systems. These efforts have proven effective on short segments of key routes but the entire road system through the Laos Panhandle has not been kept serviceable throughout the past rainy seasons.

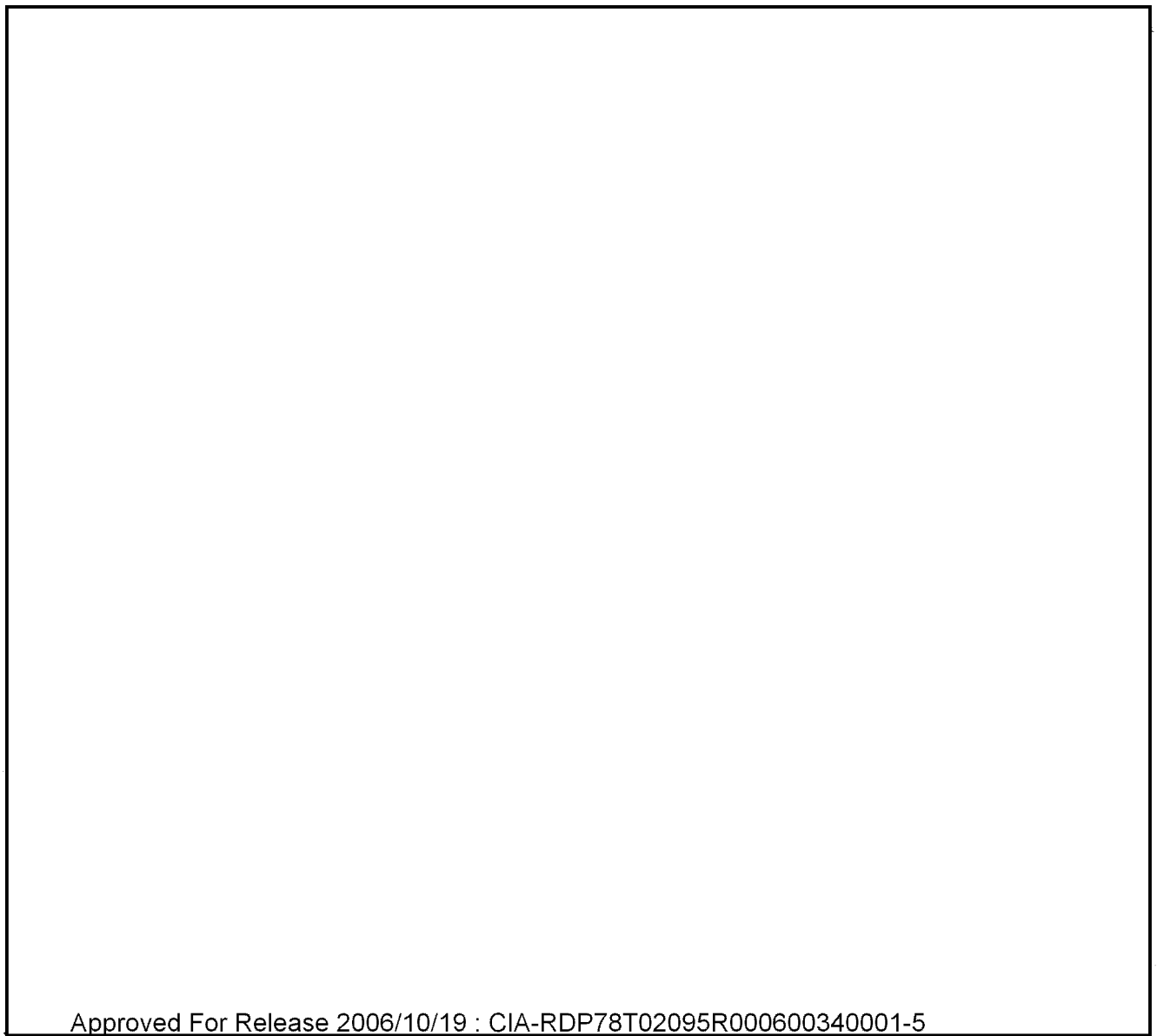

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Table 1

Estimated Capacities of Selected Routes in Southern North Vietnam and the Laotian Corridor as of 1 August 1966 and 1 May 1967*

Route Number	Dry Season/Wet Season In Short Tons Per Day	
	1 May 1967	1 August 1966
North Vietnam:		
1 A	960/120	900/100
1 5	740/250	450/100
101	610/120	610/120
137	500/100	450/100
Laos:		
12, North of Route 23	350/100	460/90
12, West of Route 23	180/40	270/0
23, North of Route 911	310/0	510/100
92, North of Route 922	310/0	380/80
92, between Routes 96 and 922	310/0	90/0
96, North of Route 165	310/0	310/0
96, South of Route 165	100/0	90/0
110	200/40	110/0
911	550/70	410/0
912	200/40	200/40
914	200/40	200/40
922	200/50	250/50

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Table 2

Estimated Quantities of Supplies Delivered to Communist Forces in Laos
Over Main Supply Routes from North Vietnam and Cambodia

Routes	Estimated Number of Trucks Moving	Estimated Tonnage Moved a/ (Tons Per Day)	Estimated Tonnage Delivered b/ (Tons Per Day)	Number of Days of Deliveries c/	Total Tonnage Delivered During Period (Tons)	Estimated Year-Round Average Tonnage Available from Deliveries (Tons Per Day)
15 and 12	19	57	46	258	11,868	33
137 and 912	13 d/	40 d/	32	258	8,256	23
DMZ and Trails	None	-	10	210	2,100	8
			5	155	755	
110	N.A.	N.A.	40	183	7,320	25
			10	182	1,820	
Total						89

a. Based on an average load of three tons per truck. For the DMZ area and trails the movement was by porters, pack animals, native craft, and /or bicycles. Figures represent tonnage before deductions for losses.
b. After deduction of 20 percent for losses due to bombing and wastage.
c. For each route the top figure indicates number of days in dry season, bottom figure the number in wet season. If only one is shown it is for the dry season and indicates no deliveries were considered for the wet season.

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